Claims:

1. A method for magnetizing a first object and/or a second object, the method comprising the steps of

arranging a first object in such a manner that the first object encloses a second object;

applying a first electrical signal to the second object, wherein the first electrical signal is adapted such that at least a portion of the first object and/or of the second object is magnetized.

2. The method according to claim 1,
wherein the first electrical signal is a first pulse signal or a sequence of subsequent pulse signals.

3. The method according to claim 2,
wherein, in a time versus current diagram, the first pulse signal has a fast raising edge which is essentially vertical and has a slow falling edge.

4. The method according to any of claims 1 to 3,
wherein the first electrical signal is a current or a voltage.

5. The method according to any of claims 1 to 4,
wherein a second electrical signal is applied to the second object after having applied the first electrical signal, wherein the second electrical signal is adapted such that at least a portion of the first object and/or of the second object is magnetized, and
wherein the second electrical signal differs from the first electrical signal concerning at least one of the group consisting of amplitude, sign, signal shape and duration.

6. The method according to claim 5,
wherein the second electrical signal is a second pulse signal or a sequence of subsequent pulse signals.

7. The method according to claim 6,
wherein, in a time versus current diagram, the second pulse signal has a fast raising edge which is essentially vertical and has a slow falling edge.

8. The method according to any of claims 5 to 7,
wherein the first object and/or the second object is magnetized by applying the first electrical signal and the second electrical signal such that in a direction essentially perpendicular to a surface of the first object and/or of the second object, a magnetic field structure is generated such that there is a first magnetic flow in a first direction and a second magnetic flow in a second direction, wherein the first direction is opposite to the second direction.

9. The method according to any of claims 5 to 8,
wherein the second electrical signal is a current or a voltage.

10. An apparatus for magnetizing a first object and/or a second object, the apparatus comprising

a first object;

a second object;

an electrical signal source;

wherein the first object is arranged in such a manner that the first object encloses the second object;

wherein the electrical signal source is adapted to apply a first electrical signal to the second object, wherein the first electrical signal is adapted such that at least a

portion of the first object and/or of the second object is magnetized.

11. The apparatus according to claim 10,
wherein the first object is a hollow tube.

12. The apparatus according to claims 10 or 11,
wherein the second object is one of the group consisting of a shaft, a wire and a hollow tube.

13. The apparatus according to any of claims 10 to 12,
wherein the second object is arranged at a center of the first object.

14. The apparatus according to any of claims 10 to 13,
wherein the electrical signal source comprises a capacitor bank.

15. The apparatus according to any of claims 10 to 14,
wherein the first object has a first electrical connection and has a second electrical connection, wherein the second object has a first electrical connection and has a second electrical connection, and wherein the second electrical connection of the first object is coupled to the first electrical connection of the second object.

16. The apparatus according to claim 15,
wherein the electrical signal source is connected such that a first electrical signal is applyable between the first electrical connection of the first object and the second electrical connection of the second object.

17. The apparatus according to claim 15,

wherein the first object has a third electrical connection, wherein the second object has a third electrical connection.

18. The apparatus according to claim 17,
wherein the electrical signal source is connected such that a first electrical signal is applyable between the first electrical connection of the first object and the second electrical connection of the second object, and such that a second electrical signal is applyable between the third electrical connection of the first object and the third electrical connection of the second object.

19. The apparatus according to any of claims 15 to 18,
further comprising an electrically conductive coupling element arranged to couple the second electrical connection of the first object to the first electrical connection of the second object.

20. The apparatus according to claim 19,
wherein the coupling element is an electrically conductive plate or an electrically conducting liquid.

21. The apparatus according to any of claims 10 to 20,
wherein the second object, in addition to the first object, is adapted to be magnetized when the first electrical signal is applied.

22. The apparatus according to any of claims 10 to 14,
wherein the second object comprises a first connection and a second connection,
wherein the electrical signal source is connected between the first connection and the second connection of the second object.

23. The apparatus according to any of claims 10 to 14, or 22, wherein the electrical signal source is disconnected from the first object.

24. The apparatus according to claim 22 or 23, wherein a portion of the second object is free from an enclosure with the first object, further comprising a shielding element which is arranged and adapted to electromagnetically shield the portion of the second object being free from an enclosure with the first object from the first object.

25. The apparatus according to claim 24, wherein the shielding element is arranged between the first element and the portion of the second object being free from an enclosure with the first object.

26. The apparatus according to claim 24, wherein the shielding element is a tube which is arranged to enclose the portion of the second object being free from an enclosure with the first object.

27. The apparatus according to claim 24, wherein the shielding element comprises a plurality of sub-elements which are arranged surrounding the portion of the second object being free from an enclosure with the first object.

28. A method for calibrating a force and torque sensor device, the method comprising the steps of

providing a force and torque sensor device having a magnetically encoded region on an object and a magnetic field detector adapted to detect a signal resulting from a force or a torque applied to the object;

applying a pre-known force to the object;

detecting a signal resulting from the pre-known force applied to the object;

calibrating the force and torque sensor device based on a correlation between the pre-known force and the detected signal resulting from the pre-known force.

29. An apparatus for calibrating a force and torque sensor device, the apparatus comprising

a force and torque sensor device;

a pre-known force generating element;

a calibrating unit;

wherein the force and torque sensor device has a magnetically encoded region on an object and a magnetic field detector adapted to detect a signal resulting from a force or a torque applied to the object;

wherein the pre-known force generating element is adapted to apply a pre-known force to the object;

wherein the calibrating unit is adapted to calibrate the force and torque sensor device based on a correlation between a pre-known force and a detected signal resulting from the pre-known force.

30. The apparatus according to claim 29,

wherein the pre-known force generating element is a pre-known weight.

31. The apparatus according to claim 29,

wherein the pre-known force generating element is adapted to apply a pre-known shear stress.

32. The apparatus according to claim 29,

wherein the pre-known force generating element is a pre-known torque.

33. The apparatus according to any of claims 29 to 32,
wherein the magnetically encoded region on the object of the force and torque sensor device is manufactured in accordance with the following manufacturing steps:

applying a first current pulse to the magnetizable object;

wherein the first current pulse is applied such that there is a first current flow in a first direction along a longitudinal axis of the magnetizable object;

wherein the first current pulse is such that the application of the current pulse generates the magnetically encoded region on the object.

34. The apparatus according to claim 33,

wherein a second current pulse is applied to the magnetizable object;

wherein the second current pulse is applied such that there is a second current flow in a second direction along the longitudinal axis of the magnetizable object.

35. The apparatus according to claim 34,

wherein each of the first and second current pulses has a raising edge and a falling edge;

wherein the raising edge is steeper than the falling edge.

36. The apparatus according to claim 34 or 35,

wherein the first direction is opposite to the second direction.

37. The apparatus according to any of claims 33 to 36,

wherein the magnetizable object has a circumferential surface surrounding a core region of the magnetizable object;

wherein the first current pulse is introduced into the magnetizable object at a first location at the circumferential surface such that there is the first current flow in the first direction in the core region of the magnetizable object; and

wherein the first current pulse is discharged from the magnetizable object at a second location at the circumferential surface;

wherein the second location is at a distance in the first direction from the first location.

38. The apparatus according to any of claims 34 to 37,

wherein the second current pulse is introduced into the magnetizable object at the second location at the circumferential surface such that there is the second current flow in the second direction in the core region of the magnetizable object; and

wherein the second current pulse is discharged from the magnetizable object at the first location at the circumferential surface.

39. The apparatus according to any of claims 33 to 38,

wherein the first current pulse is not applied to the magnetizable object at an end face of the magnetizable object.

40. Using an apparatus according to any of claims 10 to 27 for magnetizing one of the group consisting of a mining shaft, a concrete processing cylinder, a push-pull rod in a gearbox, and a shaft of an engine.

41. Using an apparatus according to any of claims 29 to 39 for calibrating a force and torque sensor device of the group consisting of a mining shaft, a concrete processing cylinder, a push-pull rod in a gearbox, and a shaft of an engine.